

WHAT IS CLAIMED

1. A purified or partially purified *Moraxella bovis* cytotoxin, produced by a gene comprising a DNA sequence SEQ ID NO: 1 deposited at GENBANK database under Accession number AF205359.

2. The cytotoxin of claim 1 obtained from culture supernatants of an isolated cytolytic strain of *Moraxella bovis*.

3. The cytotoxin of claim 2 wherein said culture supernatants were purified by centrifugation, filtration, concentration and diafiltration.

4. The cytotoxin of claim 3 wherein said cytotoxin is present in the diafiltered retentate.

5. The cytotoxin of claim 4 wherein said diafiltered retentate comprises a cytotoxin-enriched fraction.

6. The cytotoxin of claim 5, biologically active as hemolysin, leukotoxin or corneotoxin.

7. The cytotoxin of claim 6 of molecular weight of about 95 and 98 kDa.

8. A DNA sequence depicted by SEQ ID NO: 1 or a fragment thereof, encoding an amino acid sequence depicted by SEQ ID NO: 2 or a fragment thereof.

9. The DNA sequence of claim 8 wherein a fragment encodes a protein depicted by SEQ ID NO: 6 or a protein depicted by SEQ ID NO: 13.

10. The DNA sequence of claim 9 encoding the protein depicted by SEQ ID NO: 6.

11. The DNA sequence of claim 9 encoding the protein 5 depicted by SEQ ID NO: 13.

12. An amino acid sequence depicted by SEQ ID NO: 2 or a fragment thereof.

10 13. The sequence of claim 12 wherein the fragment is depicted by SEQ ID NO: 6.

14. The sequence of claim 12 wherein the fragment is depicted by SEQ ID NO: 13.

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15. A recombinant protein comprising an amino acid sequence SEQ ID NO: 2 or a fragment thereof encoded by the DNA sequence depicted by SEQ ID NO: 1, or a fragment thereof.

20 16. A method for prophylaxis of bovine keratoconjunctivitis comprising a step of vaccinating cattle or calves with a vaccine comprising *M. bovis* cytotoxin.

17. The method of claim 16 wherein the vaccine is based 25 on a native cytotoxin.

18. The method of claim 16 wherein the vaccine is based on a recombinantly derived cytotoxin.

30 19. A method of diagnosing *M. bovis* in a carrier cattle by reacting the cattle serum with antibodies raised against *M. bovis* cytotoxin comprising an amino acid sequence depicted by SEQ ID NO: 2.

20. The method of claim 19 wherein the *M. bovis* cytotoxin is captured by antigen capture ELISA and identified by reaction with antibodies.

5        21. The method of claim 20 wherein the antibodies are monoclonal.

22. The method of claim 20 wherein the antibodies are polyclonal.

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23. A vaccine comprising a recombinant *Moraxella bovis* cytotoxin comprising an amino acid sequence depicted by SEQ ID NO: 2 or a fragment thereof.

15        24. The vaccine of claim 23 wherein the fragment is depicted by SEQ ID NO: 6.

25. The vaccine of claim 23 wherein the fragment is depicted by SEQ ID NO: 13.

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26. A nucleotide sequence depicted by SEQ ID NO: 30, SEQ ID NO: 31 or SEQ ID NO: 36, encoding an amino acid sequence depicted by SEQ ID NO: 18, SEQ ID NO: 32 or SEQ ID NO: 37.

25        27. The sequence of claim 26 depicted by SEQ ID NO: 30.

28. The sequence of claim 26 depicted by SEQ ID NO: 31.

29. The sequence of claim 26 depicted by SEQ ID NO: 36.

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30. A peptide comprising an amino acid sequence depicted by SEQ ID NO: 18, SEQ ID NO: 32 and SEQ ID NO: 37.

31. The peptide of claim 30 depicted by SEQ ID NO: 18.
32. The peptide of claim 30 depicted by SEQ ID NO: 32.
- 5 33. The peptide of claim 30 depicted by SEQ ID NO: 38.

11. The peptide of claim 30 depicted by SEQ ID NO: 38.